ABSTRACT

THESIS: The Influence of Maturation on the Oxygen Uptake Efficiency Slope

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This study examined the influence of maturation on the oxygen uptake efficiency slope (OUES) in healthy male subjects. The variables comprising the OUES are known to be affected by metabolism which in turn is influenced by maturation. The subjects performed a graded exercise test on a cycle ergometer to determine the OUES and VO_{2max}. Subjects were divided into groups based on maturation status: early-pubertal (EP, n = 15), mid-pubertal (MP, n = 20), late-pubertal (LP, n = 17), and young-adult (YA, n = 19) males. Cardiorespiratory fitness (measured as VO_{2max} $mL \cdot min^{-1} \cdot kg^{-1}$) was not significantly different between groups. OUES values in absolute terms were higher in groups LP and YA versus MP and EP. Scaling OUES relative to body mass failed to eliminate between group differences whereby LP and YA had lower mass relative OUES values compared to LP and YA. Scaling OUES relative to fat free mass also failed to eliminate between group differences with EP group values being higher versus LP and YA, but only MP values being higher than YA. Differences in OUES values between male across maturation status remained after accounting for differences in body size, suggesting an affect of maturation on this measurement.